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ABSTRACT

Surveys that ask faculty to estimate how much time they spend on teaching, research, and service do not allow for activities which fulfill more than one purpose, fail to capture the patterns of actions that faculty perform to fulfill each purpose; and do not show how different features of organizational and disciplinary contexts affect the types of faculty work activities. This study used structured observations and interviews to examine the faculty work patterns of 12 white male full professors in the prime of their careers. It found that faculty do not always choose between teaching and research or other purposes of work, but combine activities to achieve multiple purposes at the same time. The critical differences in whether faculty approach undergraduate teaching as performers or as facilitators of student learning emerge from analysis of elements of faculty members' work contexts, their out-of-class actions, and their interpretations of those actions. Tables and an appendix present detailed data on time allocation to work categories; faculty activities and amount of time; social construction of faculty undergraduate teaching roles; and undergraduate education actions, and a sample activity/time log. (Contains 34 references.) (MAH)

It's All in How You Look at Things: Alternative Constructions of Professors' Undergraduate Education Role

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It's completely accurate, and as long as the answer is right, who cares if the question is wrong? If you want sense, you'll have to make it yourself.

-- Juster, 1961

Faculty productivity has been the focus of many recent higher education policy debates. Many policy makers and administrators insist that we need better ways to assess the efficiency and quality of faculty work. However, no one seems quite certain about how to apply the traditional economic definition of productivity, the ratio of inputs to outputs, to the work of college and university professors (Goldwhite, 1995). From the viewpoint of many higher education policy makers, the central concern about faculty productivity is not that faculty are working too little, but that faculty are working too hard on the wrong things. This productivity debate has seen a shift in the use of the term when applied to faculty work. For a long time, faculty "productivity" has meant *research* productivity, and it has been measured in terms of publication counts, citation counts, and peer ratings (Creswell, 1985). Of late, some feel that productivity has come to mean "teaching more students with fewer faculty" (Goldwhite, 1995). Several states have considered raising faculty teaching loads. Ohio recently passed legislation requiring faculty to spend 10 percent more time on teaching in 1995 than they did in 1990 (Cage, 1995).

To determine how much time faculty allocate to teaching, research, and service, scholars and administrators have conducted workload surveys which ask faculty to estimate how much time they spend on the teaching, research, and service purposes of their work. These workload studies have shown that the ways that faculty estimate they allocate time to the teaching, research, and service purposes of their work vary by type of institution[1] and by discipline. For example, according to the 1988 National Survey of Postsecondary Faculty, full

[1]Researchers frequently distinguish colleges and universities according to the Carnegie Classification types (Boyer, 1989). Amount of external research support, type of academic program and numbers of students are the primary distinguishing characteristics between institutions offering at least a four-year degree program, including research universities, doctoral-granting universities, comprehensive colleges and universities, and liberal arts colleges.

time faculty at public comprehensive institutions spend 22 percent more of their work time teaching and 21 percent less of their work time doing research than faculty at private research universities. Across all institution types, humanities faculty spend 5 percent more time teaching and 7 percent less time doing research than natural sciences faculty (See Table 1.)

However, there is important information about faculty work that workload studies either obscure or fail to reveal. First, most such surveys do not allow respondents to indicate the extent to which their activities fulfill more than one purpose (Romney, 1971). However, in interviews, faculty have said that their work is a "seamless blend" (Clark, 1987), and faculty believe that their "activities are so multiple, complex, and interdependent that they cannot be atomized to suit the requirements of a workload questionnaire" (Shulman, 1980). Second, most workload surveys fail to capture the patterns of actions that faculty perform to fulfill each purpose. Interviews with faculty members indicate that patterns of teaching and research actions vary with disciplinary and university contexts (Clark, 1987). Information about component actions might provide insight into relationships between university and disciplinary contexts and work purposes (Yuker, 1984: 29). Finally, since workload studies treat organizational and disciplinary contexts as aggregate concepts, they do not show how, or in what ways, different features of organizational and disciplinary contexts affect the types of work activities performed by faculty.

This paper extends the literature on faculty work and workload by addressing these concerns in relation to undergraduate education. It reports partial findings of a larger study I conducted to explore how university and disciplinary contexts influence the ways that faculty fulfill the teaching and research purposes of their work. Direct observations of twelve professors on the job and extensive interviews with faculty about the nature and contexts of their work provided "thick description" (Geertz, 1973) for a systematic analysis. I found that although faculty members in similar settings devoted similar amounts of time to undergraduate education, the patterns of actions they engaged in were quite different. Much of the difference was influenced by varying elements of the university, departmental, and disciplinary contexts. Furthermore, the ways that faculty interpreted their actions in relation to their work contexts had implications for in teaching outcomes.

The following descriptions of a few hours in the work lives of two physicists illustrate how the nature of teaching actions can be influenced by university contexts.

TWO FACULTY AT WORK: ALL TEACHING IS NOT THE SAME

Sam Youngman and Gary Byrne[2] were theoretical physicists. Sam worked at Vantage University, an elite research university with highly selective admissions standards for students. Gary worked at Metropolitan State University, an urban public comprehensive university serving a student population diverse in ethnicity, age, language, and educational background. Both Sam and Gary taught an introductory physics course on days when I observed their work. Between 8:00 p.m. the night before and 1:00 p.m. after class, Sam spent about 5.5 of his 6.6 working hours on undergraduate education actions. During a similar time period, Gary worked a total of 6.7 hours, and spent 6.3 of them on actions related to undergraduate education. Sam taught about 150 undergraduate students in two 50-minute classes. Gary taught about 95 students in three 50 minute classes.

Sam Youngman, Vantage University

When Sam Youngman arrived at his Vantage University office at 8:45, he told me that he had not worked at home the night before. That morning, he had devoted the time between 6:00 and 8:30 a.m. preparing his notes for the day's lecture. After a brief discussion with Laura, his secretary, about entertaining a candidate for a tenure-track opening in the department, Sam thumbed through a book to find a quote by Einstein. Sam marked the passage and showed Laura where he wanted copies of the passage inserted in the handwritten class notes he gave her. At 8:56, Sam walked to the demonstration lab where he discussed the experiments he wanted to conduct in class that day with Charles, the lab technician. Charles transported the necessary equipment to the lecture hall next door, and reminded Sam how to use it. By 9:14, Sam returned to his office where he checked his e-mail and discussed physics theory with a visiting colleague until 9:56. When Sam arrived at the lecture hall at 9:58, Laura had done her work. Students were already picking up photocopied sets (including the Einstein

[2]The names of individuals and institutions are pseudonyms.

quote) of Sam's lecture notes. Sam delivered his lecture at 10:00 and again at 11:00 to two groups of about 75 students each. In the Vantage physics department, this counts as two courses; thus Sam was fulfilling two terms worth of teaching requirements. The preceding term, Sam had no classroom teaching assignment.

After class, Sam talked about the class with one of his graduate research assistants and the visiting colleague. He said, "I have the feeling that if you didn't tell them it was physics, they would reason it out perfectly well. My sense from talking with the students is that they are very smart. You have to pay attention to how insecure they are, especially with signs. In practice, with almost all problems, you can look at an answer and know what the sign should be." The graduate assistant, who also worked as a grader, reminded Sam that students lost points on homework and tests for sign errors. The students were afraid not to use the signs that showed on their calculators.

Gary Byrne, Metropolitan State University

Gary Byrne car pooled with his colleague and collaborator Sharon Moore for the 35-minute drive to Metropolitan State University. As they walked into the Science Building at 8:50, Gary and Sharon planned times they would work together on the draft of an introductory physics textbook the coming weekend. While Gary walked to the student union to get coffee for Sharon and himself, he told me that he had graded midterms for his 11:10 am introductory physics class for two hours the previous evening. Even though he was only 85 percent finished grading that set of tests, Gary felt he must direct his attention to the 10:10 am upper-division course where he felt even further behind. He said that he had no time to refer to his lecture notes and that he would have to do the class "off the hoof today." Early that morning Gary had spent 30 minutes grading homework problem sets for the 12 students in that class. Back in his office at 9:11, Gary told me that he would ignore the light on his phone signaling new voice mail to focus on grading the problem sets. As he read the students' papers, Gary mumbled occasionally. "It's nice when the right things show up. . . . Now for the most turgid of students . . . Good for him! I wish his discussions would be that clear all the time. . . . Not so good. . . . This is a student who has probably convinced himself that he can't do it." Gary wrote comments on the papers: "Tell me how well the construction worked out. Did you get

the expected result? . . . Good discussion. . . . To keep control of this, pay attention to the error flags on the velocities." At 9:59, a student knocked and asked if Gary were busy. Gary replied that he was trying to grade four more papers in ten minutes and could the question wait until class? At 10:09, Gary realized that he wouldn't finish the last paper. He arrived at the classroom at 10:12 and spoke privately with the student whose problem set he had not yet graded, promising to have it done that afternoon. Gary distributed the graded problem sets to the other students. An hour later, Gary taught the 11:10 introductory physics class without a glance at his notes. As usual, he arrived late for his 12:10 course on the philosophy of knowledge across campus. His co-teacher, a philosopher, had already begun discussion of issues with the students. Gary received a one-course release from his required fourth course this term because he was supervising independent study with several physics majors and masters students.

Both Sam and Gary cared a great deal about teaching. At Vantage, Sam worked with a well-prepared and highly motivated student population, and graduate students and staff handled grading, much informal teaching, and clerical and technical preparation tasks. At Metropolitan State, Gary worked with students who were diverse in their interests and abilities, and department resources for clerical and technical support were meager, at best. As a result, Sam and other faculty I observed at Vantage had the luxury of time to focus on their teaching performance; Gary and other faculty I observed at Metropolitan State focused more on student learning.

My observations of Sam's, Gary's and ten other faculty members' work was motivated by the following premises. First, improved understanding of how faculty fulfill the purposes of their work must be grounded in empirical evidence of actual faculty work behavior rather than estimates or guesses about that behavior. Second, interpretation of faculty work behavior depends on understanding the organizational and professional contexts that shape it. This study addressed the following questions:

1. How do component activities of undergraduate education vary across university and disciplinary contexts?

2. In what ways are faculty members' undergraduate education activities and interpretation of those activities influenced by their university and disciplinary contexts?

THEORETICAL FRAME

Making Sense of Faculty Activities

The framework for this study is that work contexts are social constructions created and maintained through every day human interaction and interpretations of those actions (Berger & Luckmann, 1967; Blumer, 1969). In this view, human action is neither wholly independent of social context, nor wholly determined by it. As individuals act, they invest their actions with meaning. Understanding why Sam Youngman, Gary Byrne, and other faculty do what they do is a case of sense making (Weick, 1993). Individuals derive meaning from their actions by interpreting them and justifying them in relation to relevant and salient social contexts (Weick, 1993). All the activities actually done by faculty--not just major decisions or behavior in problematic situations--contribute to the meanings individual faculty members find in their experience of everyday reality. Therefore, what faculty do and how they do it must be understood both from observable behaviors and from the faculty members' interpretations of those behaviors in light of their university and disciplinary settings.

Collectively shared meanings become patterns of formal and informal social structures. These socially constructed patterns become the contexts within which individuals derive meaning from their subsequent actions (Berger & Luckmann, 1967; Weick, 1993). Colleges and universities, departments, and disciplines are constantly evolving social constructions, and they provide the contexts within which individual faculty activities are constrained and according to which faculty members justify their actions. The immediate set of working conditions varies for each faculty member as a result of complex and dynamic interactions between the faculty members and elements of work contexts. Figure 1 presents a diagrammatic representation of the conceptual frame of this study. The line between roles and contexts is dotted to signify that contexts are no longer exactly the same, but are slightly (if often imperceptibly) modified by each cycle of action, sense making, and role patterning.

Work Contexts

To understand how contexts affect the ways that faculty accomplish undergraduate duties, researchers must examine the combination of contextual elements that shape faculty work in any given setting rather than any one or two isolated elements. Different combinations of contextual elements result in differing effects on faculty work (McLaughlin, 1987). In this study, I considered how individual faculty members' undergraduate education activities are influenced by the contexts of the *universities* where they are employed, the *disciplines* which they practice, and the *academic departments* where they work.

Universities, disciplines, and departments are social structures that include formal and informal elements. *Formal elements* are those patterned relationships among positions designed to regulate behavior in the service of specific goals of a group or organization (Scott, 1987). Formal elements of work contexts that may influence the balance and integration of faculty work include governance (Baldridge, et al., 1978; Blau, 1973; Ruscio, 1987) , resources (Clark, Corcoran, & Lewis, 1986; Massy & Wilger, 1992; Peters & O'Connor, 1980), and policies (Hind, Dornbusch, & Scott, 1974; Clark, Corcoran, & Lewis, 1986; Levin, 1991; Dill, 1986). Informal elements are those patterns of relationship and symbolic systems that emerge from the interactions of particular individuals in a group or organization and are infused with shared meanings. The prevalent patterns of communication (Blau, 1973), values (Austin, 1990; Clark, 1987; Kuh & Whitt, 1988), and norms (Clark, 1987; Braxton, 1986) in academic work contexts are likely to affect faculty members' approaches to undergraduate education.

Components of Faculty Work Activities

Activities are "small scale personal acts" (Weick, 1993:13), especially those that are volitional, public, and irrevocable, which individuals justify in relation to salient contexts. I defined faculty members' work activities in terms of three factors:

1. the general academic *purposes* accomplished by doing the activity;
2. the specific *action* performed; and
3. the actual *allocation of time* to one or more different purposes and actions.

In this study I assessed neither intensity of effort nor effectiveness of performance. An example of a faculty work activity was when a professor drafted an outline for a lecture for a lower division physics course from 9:00 to 9:20 a.m. In this example, the purpose was teaching (specifically undergraduate education), the action was class preparation, and the time allocation was 20 minutes. Appendix A includes definitions and examples of the undergraduate education actions observed during this study.

Sense Making

Any activity can be interpreted many different ways. To reduce equivocality and create a sense of order, individuals interpret and justify their actions in ways acceptable within their social contexts (Weick, 1993). Faculty members make sense of their activities by justifying them in relation to the governance, polices, resources, norms values, and communications patterns of salient university, disciplinary, and departmental contexts. Sense making consists of the explanation, interpretations, rationalizations, and metaphors used by individuals to describe their activities.

Roles

As individuals make sense of their activities, they separate themselves enough from the activities to reflective on them and consider how the activities might be repeated. In the process, the individuals who performed the activity can see themselves and others who perform similar activities in similar contexts as types of actors. Roles, then, are types of actors in contexts (Berger & Luckmann, 1967). Within a given context, "there are standards of role performance that are accessible to all members of a society, or at least to those who are potential performers of the roles in question" (Berger & Luckmann, 1967: 74). However, these roles may vary from one context to another. Therefore, although the language used to label purposes and actions of work may be the same across disciplines and universities, the content of the roles may be different. As individuals enact roles alongside colleagues, their collective sense making about their activities serves continually to recreate the social order of university, disciplinary, and departmental work contexts.

RESEARCH DESIGN

While previous quantitative research indicates that organizational and disciplinary contexts affect faculty work, qualitative methods were necessary to improve understanding of how and in what ways elements of these contexts influence the ways that faculty fulfill purposes of their work and enact work roles. Data from case studies of twelve faculty members in four academic departments are not meant to be generalizable to populations of faculty. Rather, detailed portraits of the work of twelve professors and descriptions of their university, disciplinary and departmental work contexts yield evidence generalizable to developing theory about contextual influences on faculty work (Yin, 1989). The primary unit of analysis is the individual faculty member.

Sampling Considerations

I selected four departments for organizational and disciplinary variation. To understand how faculty perceptions context and faculty work activities might vary by institutional type, I conducted this study at one research university, Vantage University, and one comprehensive university, Metropolitan State University. (Both institution names are pseudonyms.) To understand how faculty perceptions of context and faculty work activities might vary by discipline, at each university I conducted research in one "hard discipline," physics, and one "soft discipline," English (Becher, 1989; Biglan, 1973).

I observed work activities of twelve faculty members: three in each of the four departments. Because of the small number of faculty, I attempted to limit variance in faculty demographic characteristics to the issues salient to the research questions: university type and discipline. Therefore, I controlled for rank, ethnicity, and gender. All twelve faculty were white male full professors in the prime of their careers.

Data Collection

Data collection strategies included structured observations, interviews with the focal faculty members of the study, and interviews with influential people in their work contexts. Structured observation enabled me to document the complexity of faculty work behavior (Mintzberg, 1973). I observed each professors' work activities on campus or at off-campus work centers five times, across days of the week, across the beginning, middle, and end of academic terms, and across more than one term. Throughout each day, I wrote detailed notes

about the professor's activities. I asked faculty to identify the *purposes* or consequences of each activity. I observed and recorded the work activities of the twelve faculty members for a total 442.5 hours (See Table 2). During informal interviews on observation days, I collected information about work activities done by the faculty members at home, after "regular" working hours, or off campus. The data includes 587.2 hours of immediately reported activities (See Table 2).

I collected data about higher education organization and disciplinary contexts from interviews with the faculty whose work I observed, four to five of their department colleagues, their department chairs, and their academic deans. During the one-to-two hour interviews, I asked faculty to tell me about aspects of their university, disciplinary, and departmental work environments that influence what they do and how they do it. In-depth interviews with the faculty I observed allowed me to place their behavior in context and to understand the meaning faculty make of their own actions (Seidman, 1991).

Data Analysis

To analyze the interview data about work contexts, I followed guidelines suggested by Miles and Huberman (1984), Strauss (1987), and Yin (1989). Each time an informant described a support or constraint of their work, I tabulated: (a) the context from which the support or constraint originated (university, department, or discipline), (b) the purpose of work that was supported or constrained (teaching, research, service, or a combination), (c) the means by which the faculty member perceived the support or constraint, and (d) the faculty member's attitudinal or stated behavioral response to the support or constraint. I conducted a within-case analysis of each department, looking for supports and constraints that were salient to many of the faculty in each department sample. A cross case analysis revealed similarities and differences in elements of contexts across the four departments.

To reduce the data about faculty activities from my field notes for analysis, I coded each activity as a separate record on an Excel spreadsheet. For this study, I defined "activity" as a discrete behavioral incident, at least one minute in duration, that included an action and one or more purposes for that action. Any change in purpose or action was the signal that a

new activity had begun.[3] For the purpose of this study, each activity record includes the time the activity began, the duration to the nearest minute, the method of data collection (observed or reported), the purpose or purposes fulfilled, the action for each purpose, and a brief description of the activity (See Appendix B).

Activities that fulfilled more than one purpose were coded for all appropriate purposes. Whenever possible, I used faculty members' own descriptions as indicators of how to code for purpose. I calculated the sum of minutes and proportion of his total reported time that each faculty member allocated to each purpose and action of work. I compared the reported activity data with faculty members' descriptions of their overall work schedules given during the first round of interviews. I also analyzed similarities and differences in patterns of work activities across departments in relation to patterns of context. I looked for emerging patterns, and developed working propositions.

CONTEXTUALLY SHAPED UNDERGRADUATE TEACHING ROLES: PERFORMER OR FACILITATOR

My analysis revealed that different patterns of contextual elements contributed to faculty enacting alternative contextually shaped roles as they fulfilled the undergraduate purpose of their work. In the following sections, I discuss the emergent roles as they related to: (1) elements of university, disciplinary, and departmental contexts that were important influences of faculty activities; (2) similarities and differences in faculty activities across relevant contexts; and (3) ways that faculty made sense of their activities in relation to salient contextual elements. Findings are summarized in Table 3.

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[3]Since this study focuses on the content of faculty work rather than the structural characteristics of faculty work, I calculated neither the frequencies of faculty activity shifts, nor the number of times faculty attention to a specific purpose or action was interrupted. For example, while Rich Jeffers was having an extended conversation about structuring a thesis with a graduate student, an undergraduate student interrupted for two minutes to ask about the reading assignment for his poetry class. After Rich answered the undergraduate's question, he returned to his discussion with the graduate student. I coded this sequence of events as three separate activities. For the purpose of this study, the most important aspects were the total duration of time talking to each student, the level of the student (graduate or undergraduate) as an indicator of purpose, and the action--informal teaching for both the graduate and undergraduate students.

The excerpts from my field notes of days with Sam Youngman and Gary Byrne illustrate how faculty from the same branch of the same discipline had different approaches to classroom-oriented teaching. The faculty I observed approached their undergraduate education tasks either as *performers* or as *facilitators of student learning.* The performer and facilitator roles typified alternative ends of a continuum of behaviors and interpretations. The actions and interpretations of some faculty included evidence of both the performer and facilitator roles. All of the faculty, however, exhibited a dominant approach to one role. The role of performer was enacted primarily by the six faculty at Vantage University. The role of facilitator of student learning was enacted primarily by the six faculty at Metropolitan State University.

Contextual Influences on Undergraduate Teaching

Elements of university contexts that shaped different faculty undergraduate teaching activities included teaching load, clerical and technical staff, teaching assistants, norms for student assignments, and students. The university-prescribed teaching loads at Vantage University were far less than those at Metropolitan State. The senior dean at Vantage University told me, "The teaching load is fairly uniform," averaging 1.3 courses per term. However, he immediately qualified that assertion by saying, "There are some cases you have to interpret. For instance, the lab sciences do some of their teaching in the lab." At Metropolitan State, the union contract stipulated a teaching load of 12-units, or four-3-unit classes per term. In practice, faculty in the English department and physics faculty who did not have external funding were more likely to teach four courses than faculty with external funding in the physics department. To manage the heavy course load, Metropolitan State faculty and their chairs developed strategies to minimize preparation time for each course. These strategies included teaching the same courses repeatedly, teaching the same material in slightly different ways to undergraduates and graduate students during a single term, and in physics, receiving course credit for teaching students in independent study. These strategies affected overall preparation time.

Support from auxiliary staff impacted the way faculty allocated their time to teaching at Vantage and Metropolitan State Universities. At Metro State, both English and physics

departments operated with tiny clerical staffs. The College of Science provided some general technical support staff, but they were frequently either unavailable or lacked the skills necessary to assist faculty effectively. Faculty took care of some custodial tasks. All Metropolitan State professors I observed routinely erased blackboards they used at the end of each class, no matter how late they may be for the next one. English faculty were also held responsible for ensuring windows were closed after late afternoon or evening classes. In contrast, at Vantage, faculty like Sam Youngman had ample clerical support and the physics department had a technician dedicated to setting up the physics class demonstrations.

Vantage University faculty benefitted from the help of graduate student teaching assistants far more than Metropolitan State faculty. There were no funds available for graduate teaching assistants in the Metro State English department. The physics department at Metro State had some funds to pay a masters student to grade lower division course homework assignments and to conduct lab sections. In contrast, At Vantage University, Ph.D. candidates in both physics and English were required to teach discussion or lab sections and to grade undergraduate papers and exams as part of their degree programs. The graduate students received stipends and tuition credits for this work. In the Vantage University physics department, the "reference frame" was a room designated as a tutoring center for any undergraduates needing assistance in any classes. As part of their apprentice teaching requirement, doctoral students were scheduled to staff the reference frame five days a week.

Teaching assignments and norms for assigning work to students were different in the two English departments. Metro State faculty taught undergraduate introductory writing courses that, by their nature, required frequent assignments and frequent feedback. At Vantage, such courses were taught either by adjunct lecturers or by graduate students. In comparable undergraduate, mixed, and graduate level courses, Metropolitan State faculty tended to give more frequent assignments to their students than Vantage English faculty. Vantage English faculty frequently assigned students a single final term paper, which they evaluated after the term was over.

Students themselves were a critical element of the context for undergraduate teaching. Vantage faculty acknowledged they benefitted from a very selective admissions process that

allowed them to work with very bright and ambitious students. Diverse was the best work to describe students at Metropolitan State. The open admissions policy meant that the variety of students was huge. Students ranged in age from freshly minted high school graduates to senior citizens. There was broad ethnic and language diversity. According to one faculty member, while the best students "are as good as the best anywhere," there were many students who didn't "know how to write a paragraph." Differences in students, norms, resources, and teaching load at the two universities contributed to differences in the activities faculty performed to fulfill their classroom-oriented teaching duties.

Undergraduate Teaching Activities

The contextual elements described above influenced the proportion of time that faculty at the two universities spent on preparation, informal teaching, and grading. (See Table 4 for allocation of time to undergraduate education actions.) Preparation consumed much undergraduate teaching time for Vantage University faculty. Among the physicists, Ted told me that when teaching an introductory course, he prepared for 1.5 hours before class and held office hours once a week for two hours. Sam spent two or three morning hours before class drafting handwritten outlines of the key equations or concepts he would discuss in class. Laura, the theory group secretary, then photocopied these notes for every student in the class. Paul told me when he was teaching the undergraduate upper division class that his "mode of operation as been to spend a pretty good solid day getting further through the term in my notes. And then before each class, I generally go back over the material that I'll cover that particular day." All Vantage English faculty I observed spent a significant proportion of their time preparing for classes. Even though they might have read the literary works they assigned many times, all three professors read each work again before talking about it in class with their students. I once asked Rich if he changed the content every time he taught the same course. He seemed surprised that I would even ask the question. He told me that teaching is "an organic process" and that life is about changing and growing, so of course the teaching material would change. If a student asked Blake a question, he was very likely to come to the next class with a book or two in hand that shed light on the answer. Blake also typed detailed

one-page outlines of his lecture notes and distributed copies to all students in his large lecture course.

For the most part, the Metropolitan State faculty I observed spent less time on preparation than their Vantage faculty counterparts. Certainly, the ratio of preparation time to class time was much lower for Metro State professors. Like Vantage English faculty Aaron, Darryl, and Mike reread the texts they assigned to students before they lectured or discussed the texts in class. There was wider variation in the Metro State physics department. Hank prepared intensively for each of his lectures, gathering available materials, including empty cardboard boxes, balls of clay, springs, lengths of rope and oscilloscopes so he could illustrate physics concepts with demonstrations. Not only did he practice the demonstrations to make sure they worked, he rehearsed everything he later told the students in class. In contrast, Gary felt pressure to meet a publisher's deadlines. Although he enjoyed teaching, Ryan felt his research was his top priority. Consequently, sometimes Gary or Ryan walked into a classroom after a mere glance at notes originally prepared several years before.

There was a large difference in the proportion of total time that physicists at the two universities spent on informal teaching. Since Vantage undergraduates were able to seek help almost any time from the reference frame graduate student staff, undergraduates' requests for faculty informal teaching help were reduced. In contrast, there was no such institutionalized help for students taking physics courses at Metropolitan State at any level. While students might seek their peers for informal help, Metro State faculty were besieged during office hours by individuals and groups of students who wanted help. Sometimes the students asked faculty for help with concepts or homework they were doing for classes other than those taught by the faculty member they were visiting. Informal teaching sometimes spilled over beyond scheduled office hours. There was less of a contrast between the two groups of English professors. Informal teaching was a small but important part of each English professors' undergraduate education activity. They chatted with students about course-related issues before and after class and encouraged students to come to talk about papers and course content during office hours. When students approached them, the professors frequently asked questions about the students' career plans or life in general, so such conversations included elements of advising.

Grading constituted a small, but important part of total time allocated to undergraduate education by all Metro State physics professors I observed. While graduate students graded homework problem sets, professors graded exams. Hank, Gary, and Ryan paid careful attention to students' exam answers. They tried to understand how students approached the exam problems, so they could give partial credit, even when the final answer was incorrect. All three Metro State English professors whom I observed spent much time reading and commenting on students' papers. Mike gave his ESL students frequent assignments that he graded and returned promptly. Aaron and Darryl sometimes gave their students the option to rewrite papers. In fact, Darryl structured revisions into the course assignment list for his introductory composition class. The following is an example of a summary comment Darryl wrote on a paper that he marked extensively for grammar, punctuation, theme, and structure:

> Your essay really gets into its subject on page 3, and thereafter moves well, clearly, suggestively. The earlier paragraphs are a little knotted still, in style and substance. But the effect of the whole is nevertheless substantial.

Darryl's interest in student learning did not stop with grading. Concerned about the poor writing skills demonstrated by sophomores in his basic composition class, Darryl initiated a meeting with the coordinator of freshman composition courses to ascertain her expectations for students' skill level for the course students must complete before taking the one he teaches. In contrast, I rarely observed or heard about Vantage faculty grading students' work. In Vantage English seminars, it was not uncommon for an entire term's grade to rest on students' performance on a final term paper.

Despite other differences, Metropolitan State and Vantage University faculty actions in the classroom were very similar. The dominant mode of instruction for faculty at both universities was lectures, or lectures punctuated by discussion.

Sensemaking about Undergraduate Teaching

Vantage University faculty talked of teaching in terms of conveying knowledge or excitement about their discipline. Their discussions were peppered with performance metaphors. They implied that Vantage's capable students were responsible for their own

learning. In contrast, Metropolitan State University faculty talked about helping students overcome obstacles to learning.

The faculty I spoke with in the Vantage University physics and English departments were proud of their departments' traditional emphases on excellence in teaching. As they spoke, these faculty used language that conveyed the sense of teaching as performance. For example, Paul talked of colleagues that "exude a certain presence in teaching" and about conducting in-class experiments; "Some of the demonstrations are literally theater." Jim told me that as a novice teacher, "the challenge was to be able to go before people and teach." Ted mentioned the "dramatically high" level of involvement teaching a course "that you can put yourself into." When I asked Vantage faculty about their strengths as teachers, many cited student evaluations, the reviews they had received from their "audiences":

> I got really good reviews for this course last term. I'm good at explaining complicated concepts without using highbrow mathematics. The students appreciate that. (Sam)

> Well, the course evaluations of the students always say that I'm knowledgeable. (Blake)

> Course after course, students responses are very consistent, almost uniform in saying what they like about my teaching. They all say they like my sense of engagement with the material and love of the material. They also find out that I know a lot about what I'm talking about and that I'm able to put it across. (Rich)

Some Vantage University faculty felt that conveying knowledge was their primary job in the classroom. Given the high ability and motivation of Vantage students, faculty felt they needed to be especially well-prepared. A colleague of the faculty I observed in the Vantage English department articulated how perceptions of students shaped faculty preparation activity:

> You do have some very, very sharp students, who--well I mean you start talking to them about late 18th century medicine, and they run out and get books--these are undergraduates, and they buy the book and come and want to talk to you about it. I think that it's that. The feeling that to do your job, you do have to do the best you can to be up as well as you can in what's really interesting, in what's going on. And that is what makes for that burden of

rereading and rethinking. I bet you very few people break out the yellowed sheets of old lectures and just read them over again.

Other Vantage faculty felt that their most important job in the classroom was to convey enthusiasm for their discipline because students would learn the content on their own. Paul described it this way:

> Most of what happens in education is you are learning yourself rather than being taught in the classroom. But the main thing that classrooms do, and the contact with faculty, is to set role models and to sort of get you excited about something.

The Metropolitan State faculty whom I observed and spoke with also talked of conveying knowledge and enthusiasm to students. However, Metro State professors' comments also indicated that they felt responsible for enhancing student learning. When I asked Metro State faculty about their strengths as teachers, they spoke of understanding students' perspectives:

> I was never an exceptional student, so I have a great deal of sympathy for people who are trying to grasp new ideas or have to be evaluated for their grasp of ideas. (Mike)

> Personal interactions with the students, that sense of where this person is as an individual--some sense of what the rest of their life is like is important. You simply cannot treat students as some sort of uniform smear of mind stuff out there. (Gary)

> I think my ability to empathize with the learning rate of the students, the conceptual issues they struggle with, the way their minds think. (Ryan)

Metro State faculty were more likely than their counterparts at Vantage to feel that their work as teachers made a significant impact on students. In English, Aaron spoke of "the difference we can make in the life of students who come to study here and have had no significant exposure to anything of the arts." He has witnessed in students "that first awareness that the world doesn't have to be X; it could be Y, Z, A, B or anything else--and this can change peoples' lives." Contributing to students' growth is rewarding. Aaron said, "This

is really, I think, why all of us are involved in this." Similarly in physics, Gary used the metaphor "impedance matching" to describe the department's work with students:

> "Impedance matching" means you hook electrical systems together so that when you send a signal down, you don't bounce away at the connections. And so the notion being that if you hear people coming down the pipeline, if they just hit the Ph.D. institutions, bam! they reflect off. But if they go through Metropolitan State, they mesh in.

Gary told me "hero tales" of students who came to Metropolitan State with checkered backgrounds and not only "meshed in," but succeeded. People who formerly dealt drugs or did time in prison came to Metropolitan, got "themselves back in the mainstream" and went on to Ph.D. programs at well-known research universities.

Hero tales do not happen without substantial faculty, as well as student, effort, however. A colleague of the Metro State physics faculty I observed wanted students to emerge from classes knowing as much as students in comparable classes at research universities:

> They don't all have to be as brilliant, but I don't think we should automatically assume that they can't get there. Some of them can. We need to teach them differently because they don't have the same preparation, so it's harder on us. We need to give them more help, more time, more hints. We can't assume that they will just pick it up like that. But it's wrong to assume that they can't get it. That's doing them a disservice.

SUMMARY

When I looked at actual faculty work behavior, I found that faculty did not always choose between teaching and research or other purposes of work. Instead, faculty sometimes combined their work activities to achieve multiple purposes at the same time. This finding indicates that when professors complete workload surveys where purposes are defined as mutually exclusive, they may underestimate the amount of time they spend on each purpose of work.

Important differences in faculty approaches to undergraduate education were not apparent in the proportion of time spent on teaching, nor in their classroom behaviors. At both

universities, the mode of instruction favored by faculty when in the classroom was lecture punctuated by discussion.

The critical differences in whether faculty approached undergraduate teaching as performers or as facilitators of student learning emerged from analysis of elements of faculty members' work contexts, their out-of-class actions and their interpretations of those actions. Metropolitan State faculty felt more responsible for student learning than Vantage University faculty for several reasons. Metro State professors perceived that their students might not overcome obstacles to learning without faculty help. Not only were Metro State students less well-prepared for academic work than Vantage students, but State students did not have access to trained graduate student teaching assistants as did Vantage students. Because they regularly graded their students' work, Metro State faculty were continually confronted with the immediate outcomes of their teaching. Vantage University faculty perceived their students as very capable and independent. Furthermore, because they graded students' work infrequently, if at all, Vantage faculty were less concerned with what and how students learned.

Freed from grading responsibilities, with relatively light teaching loads, and concerned with being "on top of things" for bright, questioning students, Vantage faculty spent much time preparing thoughtful performances, whether lectures or discussions, for their students. In contrast, Metro State faculty members found ways to minimize class preparation time so they might also accommodate heavy teaching loads, time for grading and informal teaching, and research.

DISCUSSION

It is my hope that faculty, administrators, and higher education policy makers can learn from the relationships revealed between contexts and work at Metropolitan State and Vantage Universities and consider how such relationships might operate in their own university and disciplinary contexts. When I began to design this study, higher education policy makers were lamenting faculty members' choices to put personal priorities ahead of institutional priorities--faculty choices to devote more attention to research than to teaching. Since that time, laments have given way to serious discussions about how to change faculty behavior.

Evidence gathered for case studies of twelve faculty in two departments in two universities shows that for the professors I observed, faculty choices about allocation of time to work activities were neither solely related to personal preferences nor motivated by anticipated rewards. Rather, faculty members' undergraduate education activities were constrained by socially constructed elements of their university, departmental, and disciplinary contexts. As faculty made sense of their activities in relation to the type of students, university policies, and local norms and values in their universities and departments, they articulated contextually-shaped approaches to undergraduate education.

At Vantage University faculty were concerned with their performance as teachers. At Metropolitan State, faculty talked about facilitating student learning. Perhaps that was partly because Vantage University students accepted that they should handle learning for themselves, and because Metropolitan State's diverse students wouldn't allow themselves to be ignored. According to one Metro State associate professor, a colleague of the faculty I observed:

> They can directly challenge you in various ways because they are working, a lot of them, and they have very complicated lives. They have all sorts of excuses for things, and reasons. They don't like to follow the rules. They speak up in class about all kinds of stuff . . . The typical research university student says, 'Tell me what you want me to do and I'll do it. . . . Our students say, 'Why do I have to do this?' It's a big difference.

Policies and local norms and values also affected professors approaches to undergraduate education in the two universities. Implicit Vantage values emphasized "effective teaching" while the Metro State values emphasized "learning." Resources available to faculty at Vantage relieved many faculty of the responsibility to ensure or even to know how much students were learning about what they were teaching. Graduate students did the grading. At Metropolitan State, faculty faced piles of exams or term papers that told them just how much their students were assimilating from the professors' teaching efforts. Faculty and administrators who are truly interested in making teaching more effective might wish to consider ways to ensure that faculty see the effects of their teaching more frequently.

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TABLE 1
TIME ALLOCATION TO WORK CATEGORIES OF FULL-TIME FACULTY
BY INSTITUTION AND PROGRAM AREA: FALL 1987

Institution Type	Percentage of Time Spent			
	Teaching*	Research	Administration	Other
By Type & Control				
Private Research	40	30	14	16
Public Comprehensive	62	11	13	14
By Program Area				
Humanities	61	17	14	9
Natural Sciences	56	24	12	8

* Teaching includes undergraduate and graduate education.

SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES), "1988 National Survey of Postsecondary Faculty."

TABLE 2
NUMBER OF FACULTY ACTIVITIES & AMOUNT OF TIME IN HOURS

Faculty	Time Observed	Time Reported	Total Time
Metro Physics			
Hank Powell	53.3	15.7	69.0
Gary Byrne	46.4	51.5	97.9
Ryan Neuman	43.7	48.0	91.7
Vantage Physics			
Sam Youngman	36.9	20.4	57.2
Paul Zepeda	4.7	56.7	61.3
Ted Klein	39.6	34.9	74.5
Metro English			
Aaron Chase	36.3	78.9	115.3
Darryl Allen	38.8	93.6	132.4
Mike Easton	45.4	59.8	105.2
Vantage English			
Rich Jeffers	34.5	38.8	73.2
Jim Gabriel	21.4	52.3	73.7
Blake Saxon	41.7	36.6	78.3
TOTALS	442.5	587.2	1029.7

TABLE 3
SOCIAL CONSTRUCTION OF FACULTY UNDERGRADUATE TEACHING ROLES

Contextual Elements	Faculty Activities	Faculty Sense Making	Roles
Well-Prepared & Motivated Students			
-- Light teaching load	-- Much time on preparation	-- Students capable of learning on their own	-- Performer
-- Ample clerical & technical support	-- Preparation focused on course content	-- Faculty responsible for conveying knowledge, excitement	
-- Graduate students do much informal teaching	-- Little time informal teaching		
-- Graduate student graders	-- Little time grading		
-- Norms for infrequent class assignments			
Students from Diverse Backgrounds			
-- Heavy teaching load	-- Efforts made to reduce per class preparation time	-- Students need help to overcome obstacles	-- Facilitator of Student Learning
-- Inadequate clerical & technical support	-- Preparation includes clerical & technical tasks in addition to course content	-- Faculty efforts make a positive difference in students' education	
-- No assistance with informal teaching	-- Much time spent helping students with homework, papers	-- Faculty responsible for helping students learn.	
-- Few graduate student graders	-- Much time spent on grading		
-- Norms for frequent class assignments			

TABLE 4
TOTAL ALLOCATION OF TIME TO UNDERGRADUATE EDUCATION ACTIONS
(Percent of Total Time)

Actions	METRO PHYSICS			METRO ENGLISH		
	Hank	Gary	Ryan	Aaron	Darryl	Mike
Formal Classroom	6.5	11.4	8.2	14.0	10.9	5.0
Preparation	18.4	5.2	1.7	17.2	15.5	6.5
Informal Teaching	18.6	14.3	1.9	3.0	2.4	0.4
Advising	3.2	0.0	0.2	0.8	0.3	0.2
Grading	3.4	6.7	7.3	8.1	14.3	10.6
Meetings & Memos	3.9	0.9	1.5	2.2	1.3	1.3
Course Development	0.0	31.2	0.0	3.9	0.0	0.0
Other Teaching	2.0	0.8	0.5	1.3	0.7	0.3
TOTALS	56.0	70.5	21.2	50.4	45.3	24.3

Actions	VANTAGE PHYSICS			VANTAGE ENGLISH		
	Sam	Paul	Ted	Rich	Jim	Blake
Formal Classroom	4.4	5.4	5.8	3.7	7.9	16.5
Preparation	5.1	25.8	0.0	46.6	14.7	26.2
Informal Teaching	4.3	5.0	0.4	4.3	3.3	3.3
Advising	0.1	0.2	0.0	1.7	1.3	0.2
Grading	0.0	0.0	0.2	0.0	1.8	0.0
Meetings & Memos	1.3	0.3	0.3	1.6	2.7	5.3
Course Development	0.0	0.0	0.0	0.0	0.0	0.0
Other Teaching	0.6	0.2	0.5	0.9	0.5	1.5
TOTALS	15.8	36.9	7.3	58.9	32.2	52.9

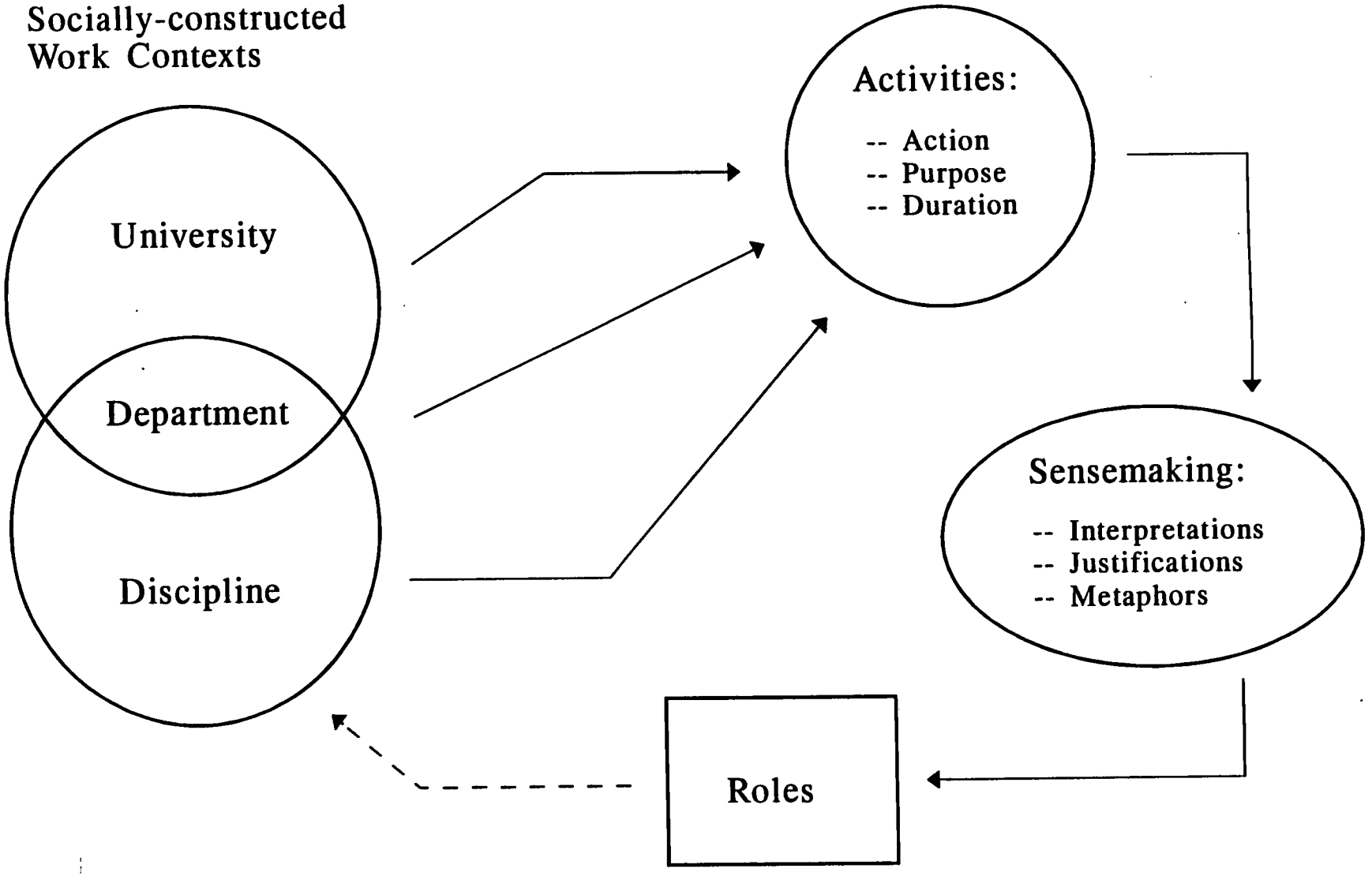

Figure 1. How interacting university and disciplinary contexts influence faculty interpretations of work roles.

APPENDIX A
Undergraduate Education Actions

Formal classroom teaching involved regularly assigned time that faculty met with groups of students to provide instruction on pre-arranged topics. For this study, formal classroom time began the moment a faculty addressed the group as a whole and ended when the faculty member gave a signal that the formal meeting period was over. Formal classroom teaching levels observed for this study ranged from remedial work for lower division undergraduates to a seminar for advanced garduate students and post-docs. Class sizes ranged from two to more than 100 students. Teaching processes included lectures, discussions, student reports, audio-visual presentations, and written and oral tests.

Preparation for classes involved actions specifically targeted toward enhancing faculty member's work with students in currently scheduled formal classes. Preparation actions observed for this study included drafting lecture notes, reading assigned texts assigned to students as well as other source materials, gathering materials for demonstrations, and practicing lecture delivery.

Informal teaching involved all forms of instruction that faculty provided directly to students outside the time limits of formal classroom teaching. During this study, I observed such informal teaching actions as discussing the physics of skiing at the South Pole, responding to individual student questions about assignments or course concepts immediately before or after formal classroom time, providing office hour help to students struggling with homework problem sets, providing individualized instruction for students taking independent study units, assisting honors undergraduates or graduate students with theses development and writing, and coaching graduate student teaching assistants about working with undergraduate labs or discussion sections.

Advising involved providing support or assistance to students on course selection, career, and personal issues. Advising actions observed during this study included charting courses needed to complete requirements for the undergraduate major, writing letters of recommendation, and counseling a student about how to work with a difficult landlord.

Course development actions involved planning altogether new courses or substantially restructuring a course the faculty member has taught in the past and plans to teach in the future. During this study, I only observed two faculty members at work on course development. The first was an English professor who, as part of an assigned task for his department's self-study, wrote outlines for two courses he would like to teach if resources were less limited. The second is a physicist who was working long hours to complete a textbook that incorporated a new pedagogical approach for introductory physics. He planned to revise the way he taught the course to better fit his new textbook.

Grading included all actions in which faculty formally evaluate the work of students, or communicate their evaluations of student work to students. During this study, I observed such grading actions as posting the solutions to problems for midterm exams on a bulletin board, careful reading of theses, evaluating a graduate student's oral thesis defense, evaluating and writing comments about students' term papers, recording and computing the distribution of scores of tests.

Faculty participated in *meetings* and sent and received memos regarding undergraduate and/or graduate education. The meetings I observed or that faculty reported to me included formal university-level committee reviews of the general education curriculum, impromptu chats with colleagues by the copy machine about the course schedules, student enrollments, teaching techniques, and department meetings about changes in graduate comprehensive exams. Faculty exchanged memos about course scheduling, class lists and interdisciplinary programs.

Most *other teaching* actions involved travel to and from classrooms. I observed a few other miscellaneous teaching ctions while conducting this study, including completing a survey about teaching practices and planning a baseball game for students in two introductory physics classes.

APPENDIX B

Excerpt from Coded Field Notes

Time	Minutes	Method	Purpose	Aspect	Period	Comments
9:30	180	rep	r.u	inq.pre	wkd	read for class (topic of new book)
15:00	150	rep	u	pre	wkd	types handout for class
20:30	15	rep	u	pre	eve	proofread handout
20:45	75	rep	u	pre	eve	handwrites notes for 2nd handout
9:00	30	rep	u	pre	day	types 2nd handout
9:30	6	obs	x		day	tells me about weekend activities
9:36	2	obs	u	ot	day	walk to department office
9:38	1	obs	a.u	dep.mtg	day	schedules lunch with adjunct
9:39	5	obs	u	pre	day	copying handouts
9:44	1	obs	u	mtg	day	helps adjunct with order
9:45	2	obs	u	mtg	day	discuss enrollments
9:47	5	obs	u	pre	day	copy/cut/paste handout
9:52	2	obs	u	mtg	day	help adjunct with order
9:54	3	obs	u	pre	day	handout
9:57	3	obs	a.u	dep.mtg	day	scheduling classes w/ administrative assistant
10:00	2	obs	g.u	mtg	day	talk about busy term w/ colleague
10:02	3	obs	u	ot	day	walk to office
10:05	3	obs	x		day	tells me about copy machines
10:08	7	obs	u	pre	day	read & organize for class
10:15	1	obs	x		day	talks to me about class
10:16	18	obs	u	pre	day	read & organize for class
10:34	2	obs	u	pre	day	discuss idea w/ department colleague
10:36	3	obs	u	pre	day	types 3rd handout
10:39	3	obs	x		day	talk about department relations
10:42	4	obs	p	br	day	br
10:46	3	obs	a.g.u	dep.mtg	day	talk teaching schedule w/ colleague
10:49	1	obs	u	pre	day	marks poems to discuss
10:50	3	obs	u	ot	day	walk to main office
10:53	2	obs	g.u	mtg	day	chat w/ department colleague about teaching
10:53	2	obs	u	pre	day	copies 3rd handout
10:57	2	obs	u	ot	day	walk to class
10:59	7	obs	u	pre	day	arrange chairs, blkbd, windows, door
11:06	3	obs	u	fcl	day	talk 'hsekeeping details' to class, handouts
11:09	27	obs	r.u	fcl.prs	day	lecture--topic of current book
11:36	24	obs	r.u	fcl.inq	day	class discussion--relevant to book topic
12:00	1	obs	u	inf	day	student--why missed class

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